

Scientific Thought

Its work - its limits and its tendencies. -

Read before the Brooklyn Thursday Club Mar 29 1877

"The Arts and sciences have corrupted Mankind"! this was the discovery which made itself known to the illustrious Jean Jacques in such a dramatic burst of inspiration, as must probably remain without parallel in all history. For has not the great Rousseau himself told us how during his rambles this thought one day seized him, and as it were threw him to the ground, where he remained for hours; and how though not conscious of the fact that he ^{was} ~~had~~ been weeping - he at length arose to find his bosom wet with the rain of his own tears? "The Arts and Sciences have corrupted Mankind,!" Verily! this was a discovery of which one might say - in newspaper phrase. "Important if true" - And when we remember the melodramatic character of the age in which he lived - perhaps we need not wonder that Rousseau's soul fell into such labor

pongs at its delivery. — A little later and Voltaire
had made his equally sage discovery that Religion was
the prime cause of human degradation — and was writing
to his brother philosophers from the banks of Lake Geneva
firmly urging that they should "squellch the Thing" — or to use
his own word "l'infame". — the base wretch. — Here then
the traditional warfare between Religion and Science, of which
we have heard so much in our day — broke out in a curious
fashion between two self-constituted champions, neither
of whom had any clear title to speak in ~~half~~ ^{behalf} of the parties
which they respectively represented. — For if Rousseau was not
in any high sense a religious man — neither did Voltaire
ever approve himself a man of much scientific attainment,
~~that~~ ~~But~~ In the cry raised by Voltaire there might have
been some truth. Certainly Religion had had ample
opportunity for ^{signifying} ~~completing~~ the Revolution — had that been her purpose
or unconscious tendency, — for she had been in the world
from the beginning and always in possession of power. —
But concerning Rousseau's discovery — one may say — that

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if the Arts and sciences had corrupted Monks, they
must have had a desperately hard task of it, and must have
made most ample use alike of the little time and the
very limited opportunity vouchsafed to them, Rousseau's
statement was manifestly absurd, - for the sciences had hardly
been born when he wrote his famous paradoxes - and
the few scientific men of eminence who lived during the
middle ages were always under the horror of the
Inquisition, - If such a very little ^{amount} ~~of fire~~ ^{of coal of fire} and that
^(in Rousseau's estimation)
so assiduously smothered by watchful priests, had ^{set}
the world aflame - ^{he might have seen that} ~~then it may have been~~ such inflammable
material could not well be protected from spontaneous
combustion, and that could he get ^{them} ~~the world~~ back again
to the happy days of barbarism, that were hardly worth
while, seeing that all ^{their} ~~its~~ was ^{might} ~~to~~ return, if
some unlucky savage did but wish to know a little more
about the ~~man~~, - - ~~But~~ Perhaps if one believed the old
adage - that a little knowledge is a dangerous matter,
one could see ^{that} ~~then~~ the Arts and sciences - were in some

measure responsible for the immorality of the 18th
Century. - But we should have to ascribe to the ^{few} great
masters in Music ~~and~~ painting and Architecture, a superhuman
power, to suppose them capable of corrupting their race,
and for Rousseau to lay the charge at the door of Science,
was ^{to show} ~~at~~ himself master of a wisdom only equalled in that
Arabian tale, which makes the wreck of a ship containing
a cargo of Salt - responsible for the briny flavor of
the waters of the Sea. - In the middle of the 15th Century
when Halley's Comet appeared, - Europe sunk upon its
knees in trembling ~~consternation~~ ^{consternation} before the dreadful ^{Omen} ~~omen~~;
Its fiery tail was supposed to ^{be} covered as thickly as
a blackberry bush with fruit - by seeds of the most
dreadful pestilences and disasters, which were whirled
down upon the earth in showers. - Accordingly,
by express orders from the Sovereign Pontif - not only
were ~~prayers~~ everywhere offered and solemn religious
feasts observed, to the end that ~~the~~ powers of heaven might
be induced to remove ^(the source of so much evil) it. - but all the Church bells

of Christendom were all ringing - to frighten it away. -
Certainly in the year of our Lord 1456 - There was hardly
enough science in the world to be a source of wide spread
corruption. - - A century later Copernicus gave to the
world his discoveries in Astronomy. But they do not seem
to have at once assumed control of the human mind. -
for in the very last year of ~~that~~ the 17th century. Bruno
was burned at the stake, - mainly as it appears for teaching
the doctrine of the plurality of worlds which he had drawn
from Copernican theories. - In 1616 the Inquisition
condemned prohibited and burned the works of Copernicus
+ Kepler and Galileo, - and in 1632 the latter having
again written in defense of the system of Copernicus only
escaped death by public recantation and disavowal. - But
even this did not give him liberty, and he remained from
that time forward till his death, the close prisoner of the
Inquisition. - Surely, these men did not know things
quite their own way in the world, and if the end of their
mission was to corrupt the race, they found some very

serious obstacles in their pathway, - If now we pass over
another century and come down to Rousseau's own day, we
shall find evidences that scientific thought - although it had
gained great strength, did not entirely hold the reins of
power, but was sometimes subjected to the most tyrannical
movements, - - And let us pause to say that the desperate
contest which science fought for existence, was neither
in the 15th nor the 18th century, & was with a few priests
who claimed to be in authority, - It is sometimes the
fashion to set the Inquisition on one side, and the remainder
of the human race on the other - as the parties to a long
continued strife. But the Inquisition was only a power
because it was the organ ~~of~~ through which - not garrulous
priests alone - but the dumb masses spoke, - However
much authority may seem to reside with Popes and Kings -
the real power and authority is in the ^{multitude} ~~people~~ whose
beliefs and wishes they represent, Science fought - not
alone a few individuals - but the masses of men, - If any
deadly poison lurked under its ideas, it can hardly be held

responsible for the diseases of the multitude, whose minds were closely locked and barred against ^{its} entrance. —

In 1745 - then - Diderot - conceived his idea of the Encyclopædia, and set to work in very able and earnest fashion to gather up all the learning and knowledge of his time into one great storehouse. — Of course he had in view some purposes - beside that of furnishing a complete Dictionary of the Arts and Sciences. — He and the Philosophes generally were at war with the Jesuits, — and the Encyclopædia was meant to be an instrument of great damage to these ancient foes of free thought. — The Encyclopædiste were not purely scientific men. — But it was the science in their great work, which the Jesuits hated, and at which they were still able to strike some very serious blows. —

The work was from the first submitted to a most rigid censorship - , and its editors were ^{often} compelled ~~to~~ to hide their true ^{meaning} ~~thought~~ — "Time will enable people to distinguish" said ^{D'Alembert} ~~D'Alembert~~ "between what we have thought from what we have said." — But notwithstanding these precautions —

where the 3^d Vol. appeared in 1752 it was almost instantly and entirely suppressed. - The same year all Disdrol's articles and papers were seized by the Police, and only returned to him, when it was found that the Priests into whose hands they had been consigned - were utterly incapable of carrying the work forward in any fashion. - In '59 his printer assumed the ~~the~~ work of revising the proof sheets unknown to Disdrol, who only discovered the trick that had been played him, when some years later the concluding volumes appeared in a frightfully mutilated condition, then the poor editor had no remedy but to curse the infamous printer and not his own ~~own~~ hair. - After all this - at the completion of the work in '72 - the subscribers were forced to hand their copies over to the Police. - by whom they were at length returned to their rightful owners, only after a still further abridgement had been made. -

Such were some of the difficulties which scientific thought had to face - less than a hundred & fifty years ago. - in a country which proclaimed itself the most civilized on the face of the earth. -

On the whole one does not see what more could have been done to prevent the arts and sciences from leading men astray - than was done. - The Church of the middle ages certainly did not lack for will or energy in this work. - and if all the fertile brains and unscrupulous hands at her command - were not able to stay whatever tide of iniquity the moon of scientific ^{like the} ~~thought~~ ~~reflex~~ had raised - it may be safely assumed that ~~this~~ ^{times of the sea, this} ~~time~~ was beyond all human control. -

But since Bruno was burned, and Galileo ^{was} compelled to abjure his heresies. - even since Descartes found it so difficult to get scientific facts into print. - Times have vastly changed. - To say there is not the slightest obstacle in the way of the man who wishes to print or talk about science. - except those very slight ones which serve ~~as~~ so ineffectually as a check upon all printing and talking. - Probably there must always be in every generation a certain number of individuals, who are hungry for martyrdom - and who in the absence of any real opportunity

for gratifying their ruling passion, are continually
^{impelling}
~~impelling~~ themselves upon the point of some little
thorn, and calling the world to witness how they suffer for
conscience's sake, -- No matter if the thorn is so high
up that - metaphorically speaking - they have to climb a ladder
to reach it, - or is so short that it barely suffices to
abrade their sensitive skins, -- if only they can find a thorn
they will
~~manage~~ manage to hitch themselves upon it somehow, and
make enough noise of wailing if that were all, to be
accounted genuine martyrs, - Some of these individuals
would fain get themselves sloughed in the name of
science to say, - and try to cheat themselves and the world
into believing that they are persecuted for proclaiming
scientific truth, - But when you sift the matter down
their grievance appears to be that society will not furnish
them with an audience as well as give them a chance to
speak, or will not always be convinced, after it has
patiently listened to their harangue, - You will notice
that if a man fails as a public speaker, he is quite as

6 apt to attribute his failure to bigotry or stupidity on the part of the public - as to a lack of qualification in himself. Some martyrs of this kind there undoubtedly are, - but not many of any higher order, I think to-day. - Scientific thought, instead of hiding in corners, and veiling itself in sayings of double significance, under fear of dreadful penalties, - ~~now~~ now walks boldly abroad; - and if there be still some who molest - there are none to make it afraid, - Scientific men have all the liberty they can ask for, - They are under no social ban - and there is no limit set by earthly power to the range of their investigations. They are subjected to nothing more annoying than the newspaper squibs which are truly found at all points to a disputed question, and from which they suffer least of any class of men before the public. - Mr. Darwin's Theories have been ~~used~~ ^{used} as the butt of much good natured fun in our illustrated papers. - But he has never been used as Mr. Moody is treated in a Boston Weekly. - and if he were to ~~be~~ be, I fancy that a very energetic board

would arise from some people who now applaud,
Lauds; so for ~~for~~ an scientific man from having any
constraint put upon them, that they themselves are able
to undertake the task of setting rules and bounds to
religious thought. - Science is made by many of her worshippers +
the only real Pope in science. - Her utterances are regarded as
infallible truth. - The Head of the Church is only deemed infallible +
by a council of priests. - Science is taken so to be in actual
fact by a large portion of the thinking public. - All her
~~regarded~~ ~~looked upon~~ ^{regarded} ~~by most~~ ~~people~~ ^{as}
working theories are ~~taken to be~~ unquestioned truths. - Though
as anything more than working theories, ~~they~~ some of them are
easily shown to be absurd and self contradictory. - The Atomic +
Theory, for example, is actually unthinkable when you look
at it closely. - at least it is unthinkable from the Mathematical
standpoint which is the only one science has a right to
assume. - Yet the mass of people who think at all about
the subject seem to suppose that this Theory is a part of
some eternal law + Gospel. - Science is the Pope of the
Law. - Every petty contest of mental wars - has

it is
 only to label his trash - "scientific", and ~~they are~~ ^{as} sure to
 find ready purchasers, - as did papal indulgences in the day
 of Luther. - Of course Science is no more to be held
 herself responsible, for all the evils made after her name, than
 Religion was responsible for the abuses which grew up in the
 medieval Church. - But as the course of a victorious army
 is always marked by the ^{rapacious} crowds ~~of~~ which hang upon its
 outskirts, so one can tell ~~what~~ ^{what} are the dominant ideas
 of an age, - by observing the livings put on by those who
 prey upon the beliefs of their fellow men. - During the middle
 ages, this class found always some means of connecting
 itself with the Church. - Today it hangs out the banner
 of science. - The hordes of spiritualistic lecturers who have
 swarmed over the country, have proclaimed themselves nothing ~~of~~
 if not scientific. - You never find them advertising themselves
 as prophets of a new religion. - It is a new field of science that
 they have opened. - So we have had teachers in Phrenology -
 of Stirpiculture, of every known "issue" or hobby under the
 sun - all of them zealous champions and upholders of the cause

of Science. - You say - These ~~men~~ people are not scientific. -
Assuredly not - unless you will call Titus a religious man, +
But they serve to indicate the temper of an age - as
accurately as straws show which way the wind blows. -
We have a man in our midst, ^{who displays his shrewdness} ~~whose shrewdness is shown~~
by connecting the name of a great Boston Preacher, with subjects
which in themselves have slight power to attract a crowd;
and this man - as a disciple of Kant - professes to furnish
us with a scientific method - which is nothing more than
the method used by his Master, and which is purely Metaphysical.
I do not accuse Mr. Cook of any intent to deceive,
though it must be perfectly evident that the few words he
uses to say of Theodore Parker ^{do} not justify him in placing that
name at the head of his lectures. - Very likely he does suppose that
we have laid a scientific foundation for religion. - But I rather
incline to believe that he too has gravitated by a sure instinct,
to the popular scientific current, and has found that ^{adjective} ~~term~~
much more potent with the public ear, than the words
religious & metaphysical. -

There can be no mistaking the fact that this is above
 all things a scientific age, - Science is the one subject
 of general and absorbing interest, - Let Prof. Tyndall step
 upon the platform of the Tabernacle to deliver his lectures on
 light - and you should see audiences signal in sign to those
 now gathered there, and mark more attention to the speaker's
 words, - Theological controversies are of slight interest to the
 public at large unless they have something to do with
 science, ^{I think} This ~~day~~ Mr. Cook has discovered, - and though
 his lectures are almost exclusively Metaphysical, he puts
 into them just enough science, to flavor them to the public
 taste, - - The ^{current of public thought} ~~public mind~~ sets in the direction of scientific
 discovery and invention, - - While men who are a little
 outside that current - often look with dismay - upon its
 swift advances, ^{many} ~~they~~ who move with it are full of
 the most extravagant dreams of the future to which
 the world under their guidance ^{is} ~~are~~ to be introduced,
 To them the Church is an antiquated institution, There
 can be no doubt that many nominal Christians

simply tolerate the Church as a means of moral growth
and enlightenment, and look to science as the instrument
which can alone prove effective in dealing with social
wrongs. -- Scientific thought is to-day in the ascendant and
has ample opportunity to prove what is its value to the
world, -- Whether its influence tends to corrupt or elevate
the race, the next century -- looking back upon this,
will be able to determine accurately. -- I do not suppose
that any gentleman intelligent enough to ~~have~~^{have} been made
a member of so enlightened an organization as the Brooklyn
Thursday Club, doubts that on the whole science has
given the world a great impulse in an upward direction.
But is it not worth while to ask how much may
be expected of scientific thought? What are the limits
to its service, and how many of ^{the} world's standing
problems is it likely to solve? -- We hear with one ear
that science is destined to usher in that millennium
which has so long waited upon ^{the world's} ~~the~~ threshold, and into
the other are poured dismal forebodings of what shall

result from the skepticism known to be so widely prevalent among scientific men. - Doubtless the truth of the matter is to be found here - as elsewhere - somewhere between the two extremes. - To the unprejudiced mind it must appear that science is not likely ^{either} to do so much damage or to effect so much good as the sensations hopes and fear of men lead them to believe. - - But can we not say more definitely just what. - in some particulars at least - it can accomplish - and just where it must fail? - I think ~~there~~ ^{then} are some certainties, which throw a very strong light on this question, and enable us to ~~form~~ fashion a reasonably conclusive answer. -

We may regard it as certain for one thing that the degree of 'interest' now manifested in science - is temporary and not permanent. - All great mental movements seem to be in the nature of waves - which swell and subside. - It is at one time war - at another philosophy; - ~~It~~ it is now music - then architecture, then painting - and last of all it is science to which the mind

specially devoted itself, - Very likely when Michael Angelo
was painting his immortal frescoes, - Rome thought that
the day of small things in Art had forever passed away, -
There seemed to be no reason why there should not be a
succession of Michael Angelos, to the end of time, - But
there was only one - and after him the great ^{art-}~~artistic~~ wave
sunk back again to the dead level of mediocrity, - So does
all history ~~teach~~ us, that the ardor with which this age
has pushed its ^{scientific} investigations, - will in great measure pass
away, - It is not in the nature of the human mind ~~that~~
to hold any such impetuous age after age, - It must wax
and wane, as by turn the mind devotes itself to different
pursuits, - We may take it for granted that this wave
of enthusiasm will not endure long enough to sweep
the world any great distance from its present position,
It will leave us very far ~~and~~ indeed from the millennium, -
The question is what instruments and methods will it leave
in our hands - by means of which to pursue the march
of progress in more ordinary plodding fashion? -

It is, I believe, well settled - that the Method of Science is almost purely inductive, - and inductive in the most rigid sense of the word, - Its work is to gather and classify facts, - To compare fact with fact - in such way as to get from them general truths which cannot be called in question. It allows itself no latitude for the interpretation of isolated facts, or for deducing special truths from general propositions. Its symbol is the pyramid, - Broadly based upon facts & universally ^{recognized} ~~recognized~~ by the senses - it constructs upon these another order of facts shaped by the understanding, and so on ~~up~~ upward till it has reached the one universal Law, which is upheld by and explains all underlying phenomena, - - - This method gives definiteness and certainty, and hence is said to give us Knowledge - or Science. -

If - being ignorant of all modern Discoveries - I note one special occurrence in nature - and ask myself for an explanation of it, I may hit upon a dozen probable theories, among which I must choose the most probable, - My neighbor very likely will take that one explanation to be

most improbable, and therefore as there is no certainty of
agreement between us, we come to nothing which we can
^{unite}
~~agree~~ to call fixed knowledge or science. - But now
if instead of forming any theory upon this one fact alone
we put twenty - fifty - or a hundred facts together, and begin
to investigate what they have in common - I very soon
find that there is but one theory which will explain them
all, and upon that my neighbor and I can fix as something
settled, - To both of us it becomes knowledge - or scientific
truth. It appears then that the first requisite of
science is a class of facts, of the same order, - It can do
nothing with one alone - It must have several of the
same kind seen under different conditions - in order to
establish the general law upon which all depends, - ~~It~~ ^{Through}
Any single point ~~any~~ one may draw an infinite number
of circles, But through three points - not in a straight
line - only one ~~circle~~ circumference can be made to pass,
So the multitude of conjectures about a single fact - are soon
away when you get a group of facts, upon which only one

thing can be constructed, - The second ^{requisite} ~~condition~~ of
 science, is that the facts upon which induction is to be
 based - should be universally recognized as facts, - This
 is so plain and necessary a requirement, that one would
 think it should not be overlooked, - And yet men
 are constantly assuming that what appears to their minds
 facts - no matter how strenuously they may be disputed by
 others - are a sufficient basis for scientific knowledge. -
 It is forgotten that ^{such} ~~only~~ knowledge must express
 the agreement of men. - If each man were to make
 his own system of nomenclature - and establish his own
 axioms - different from those of other people there could be
 no science of Mathematics, - If every sane mind did not
 see that things equal to the same thing must be equal
 to each other - Geometry could ~~not~~ not proceed a
 single step. - For there is no method of proving that
 axiom, - If it be not self evident to every mind - it is
 nothing, and the propositions proven by means of it can
 have no certainly convincing power. - Every science

must stand upon something universally recognized. —
Its ~~of~~ facts or axioms must be such as no one will call
in question, or the conclusions drawn from them will not be
beyond dispute. — The test of science is its power to convince,
and if it does not start ~~for~~ with something of which men
are convinced, it can never by any devious manipulation
of its materials get this power out of them. — Surely
it is perfectly plain that scientific knowledge must
stand upon a class of facts — concerning the nature and
existence of which men are everywhere agreed, and that it
can stand on no other foundation. — As the Science of
Astronomy never could have arisen from observation of
the moon alone — or if the movements of the planets
had appeared differently to different observers. — But because all
saw precisely the same movements among the heavenly
bodies, and were enabled to compare different phenomena
with each other, — men have arrived at certain truths
about the stars — capable of being proven to the entire
satisfaction of any sound mind. — — — Therefore, therefore

men are agreed concerning some number of fundamental facts, then they may have a science - and they cannot have it, except - on this condition, - - This seems to me the simplest and most accurate way of getting at the limits of scientific thought. - - Now the laws of vision being the same for each individual, and one eye being in its mechanism precisely like another, what men see, will make substantially the same impression upon all organs of sight. - Whatever fact the senses can perceive will be reported as a fact to all men, and under the same ~~for~~ conditions all men's reports of it will closely correspond. - The sky is blue - The rock is hard. - - the first and fifth tones make a musical chord - and wormwood is bitter, to all men. - - But the instant you leave the realm of the senses this argument vanishes. - A reality which does not report itself to them, cannot serve as the basis for scientific knowledge, and is not a subject to which the scientific method can be applied. -

The mechanism of the mind is capable of infinite

variations, and as an instrument for noting facts it is very different from the eye ^{and} ~~to~~ the ear, - which are nearly alike in all bodies, and whose reports of the same fact closely correspond with each other. - Therefore there never has been - there is not now - and in all probability there never will be any perfect agreement among men concerning facts which do not appeal to the senses. - Properly speaking there is no science of Medicine, because the life or nervous energy of the body - cannot be seen or heard or felt. It altogether escapes the senses, - and the facts about it the mind can only get at through inference. This means that there is and can be no class of facts about the nerve fluid universally recognized. There can be therefore no scientific knowledge of its action, or of the methods of dealing with it. - There is a science of Anatomy - because the bones and tissues can be seen and handled. - But the practice of Medicine is purely empirical. - It is found by experiment that certain drugs have a certain action. - But no man

attempts to explore their action; and as ~~the~~ conditions of life and types of disease are constantly changing, - so the action of drugs changes, and the physician never escapes from experiment to certainty. - Until nerve action can be studied by the senses. I do not see how then can arise a science of medicine, - and that "until" - means never. The different schools of practice have no common ground upon which to discuss questions at issue between them. They ^{cannot} ~~can~~ convince each other, of error, - and the tendency of all - as in religion - is toward wider separation rather than toward agreement, - There are no sects in astronomy because there is agreement as to the fundamental facts upon which that science stands, - These facts are perceived by the senses. But when we approach a reality so entirely unknown to the senses as human life, we can gain no foothold upon which to erect a science, - At once each mind bases itself upon ~~a separate foundation~~ ^{which} ~~what~~ it takes to be fact, and ~~all~~ out of elements so discordant no uniformity of thought can arise. --- I will only refer briefly to some

other illustrations of the limits of Science. - We have
heard much lately of the scientific method in Religion. -
That is pure bombast. - Science has no business in the
religious realm, - and whenever it invades that domain, it
deserves, as the Nation has phrased it - "to be collared and
summarily ejected," - The facts upon which Religion stands -
whatever they may be - are not facts of which the sciences can
take note, and hence there is about them, no such agreement
among men - as would make them fit to be treated by a
scientific method. - No more can there be any moral
Science. - It might seem at first that ^{since} ~~some~~ the
consciousness of all ~~of~~ civilized beings unite, ^{to proclaim} certain
acts wrong and others right, - such an agreement might
serve as the basis for a Science of Morals. - But this
^{uniformity of conscience}
~~agreement~~ is often all very narrow in its range, when
you look a little more closely. - One essential element
of an act - from a moral point of view, is the condition
under which it is done, - and when you attempt to take
that into consideration - the widest disagreement breaks

out again, - All healthy consciences declare that lying
 in the abstract is wrong. - But is it wrong to tell a
 falsehood under threats of violence, - or how serious a
 danger will justify one in perverting the truth? - Is it right
 to deceive a person for his own good? - and if so, within
 what limits? - There are questions to which a multitude
 of responses will be returned - and concerning which there
 is no hope of ^{accord} ~~agreement~~. - Again how ~~it~~ can there
 be a moral science when the question whether man is a free-
 agent or the creature of fate, has been debated for hundreds of
 years, without bringing mankind one possible ^{near} ~~near~~
 unanimity? - While the very bottom facts of the moral
 nature are in dispute, it is impossible ^{to} construct upon
 them any system of thought or life which shall have
 power to convince all minds, - — Great things
 have been hoped in these latter years of Political Economy,
 and then are those who call that a science. -
 It is absurd to call by that name anything now
 in existence. Though it is conceivable that an actual

science of political ~~and~~ economy should ~~not~~ arise.
The present condition of our national finances, and
the multitude of conflicting theories respecting our ^{currency} ~~and~~,
may show us that if there is a science of such things in
our midst - its first principles are as yet known only to the
~~very~~ ^{few} ~~few~~ ^{few}. - And yet one must believe that when
men ~~will~~ rid themselves of preconceived theories - and look
into the case with unprejudiced minds, then are facts at the
bottom of ^{political life} ~~it~~, as plainly to be seen as that two and two
make four, - facts therefore out of which may grow an
exact science, - Commercial dealings and relations - offer
to the scientific mind a fair field, - Patient observation will
then disclose certain constant and persistent ~~the~~ phenomena,
whose existence is not in the least a matter of inference -
but which are plainly to be seen by all men, and which
to all eyes will wear the same appearance, The dream
that political economy may at last set all these things
in perfect order is well founded, - But if ~~you~~ it is
proposed to elevate the art of governing men into a

science and to call that political economy, - ~~that~~ that is a flight of the imagination entirely outside the limits of scientific thought. - Gold and iron and cotton are definite external realities, ~~with~~ of definite value and use, Political economy may tell us how to get the most out of these things at the least expense. - It may show us ^{whether} ~~that~~ protection or free-trade, offers the most favorable condition for the ^{growth of the various manufactures and industries.} ~~specimen of industry~~, - or at least under what circumstances and to whom, protection and free-trade are respectively advantageous. - This can be done because there exist the requisite facts - which are generally known as facts - and only await someone to set them in order. - But man as a subject of study is very different from gold or cotton. - The political economist must treat him as a machine - to do anything at all with him, and a machine he is not in any sense of the word. - You govern him not through his body but through his mind, and that is a force which is never the same in appearance on two successive days. -

To begin with the sciences do not tell you anything of its nature or requirements, - You are thrown back upon inference to pick up what facts you can, - and were there ever so trustworthily a method, it would be exceedingly difficult to find the ^{stable} ~~required~~ foundation for a science - in a reality whose moods and phases are so shifting as those of the human mind, - There is an art of governing men - but there will be a Science - never, - One ~~may~~ man will do that work well - and another ill - according as one is fertile in invention and quick to read the signs of the times - while another is slow to perceive and invent, -

Thus it will always be - for we shall never be able to put into the hands of our governors - a scientific system which can atone for their lack of mother wit, - I do not certainly know who invented the phrase, "political priests," But it is a very good one - even if it should turn out as I suspect that it came from the turning brain of Mr. Benj. F. Butler, - For political priests there certainly are, - men who assume that their political creed is made

+¹⁶ out of absolute and ^{infallible} ~~infallible~~ truth - who seem to have found some occult science which shows them to the inside of a hair what is expedient, and who therefore think themselves entitled to treat like brightened leather, all who differ from them, - But there is no ~~any~~ way of getting at political truth with such accuracy as this would imply. - What to do in any given political emergency is and must continue to be a question of opinion or belief - not of science. —

I fear that I have been unnecessarily tedious with my illustrations, for it is a very simple truth that I wished to elucidate. It is, that science can find what suffices for its basis - only in the outward world, - When we come to life itself - though facts are abundant enough they come to us not through the medium of the senses - but mainly through such ones study of his own experience, - But each man ~~now~~ views himself not through a simple mechanical instrument like the eye, but must turn all the complex organism of his own mind

back upon itself. - If men should go out to look at the Moon - some
with blue glasses - others with green - some through telescopes
and some through microscope, some furnished only with tin
horns and others with battered pieces of stove pipe, - we should
not ^{expect} their reports of the common object of observation to be
anything like the same. - While human minds are so widely
~~different~~ ^{different} in constitution, we need not hope that
~~the results~~ ^{mental} of self observation, will result in anything ^{which may be used} ~~good~~
for scientific purposes. - What it reveals will be fact to the
observer, but not of necessity to anyone else. - It
follows then that Science can help us just so far as this,
It can explain for us, and can teach ^{us} how to rise to the
best advantage all outward things, - But so far as
moral enlightenment and the great work of strengthening and
purifying human character are concerned - Science leaves
the world for the most part just where it has always stood. -
It can not destroy - nor ~~subvert~~ ^{directly} aid religion. - for
it is incapable either of proving or disproving the moral
truths which religion affirms. - Indirectly, then can be

17 no doubt science has secured a vast ~~large~~ amount of
moral progress. - Give the average ~~of~~ ^{the} denizen of the lowest
quarters of our cities a decent place to live in, take him
out of his squalidness and ^{furnish him with} ~~give him~~ some of the comforts
and conveniences of life, and then is no doubt that he will
try harder to make of himself a decent citizen, - In
providing for the more better material conditions - science
has indirectly stimulated its moral nature, - - But ~~it~~ ^{it permits}
in this way no bulwark against immorality, - for the luxury
which it makes possible - is a most dangerous foe to virtue,
Some over zealous champions of popular Education would
have us believe that the ~~world's~~ ^{world's} vices are to be cured by
teaching men arithmetic and natural science, -
Suffice it to say here that science is only an efficient
tool in the hands of the well disposed - and is not a
remedy for the moral weakness of the ill-disposed, - You
cannot tell whether ~~one~~ is an upright man or a
villain - by questioning him as to the distance between
the earth and the sun, - - Were men all strong

in righteousness, - Science might easily conduct us to
the Millennium, - But meanwhile - sober minded people
must feel that the world's greatest need is moral rather
than scientific enlightenment, -

I had intended to call your attention somewhat at
length to certain tendencies of our scientific age, - of
which I must now content myself with only mentioning
one, - This is a tendency to see ~~more and~~ ^{with} increasing
clearness, that "there are more things in heaven and
earth than are dreamed of in your philosophy, -" It is
said that science makes men skeptical, Immediately that
is true in South, But ultimately it is quite as likely
to make men dreamers - full of superstitious fancies, - #
Science only climbs the heights of certainty to look off
upon an infinite domain of possibility, - The man
who has read most of notions recent, will be slow
to tell you what is impossible, - - How when this tendency
goes to the extreme it makes men credulous, and I
have sometimes thought that our age might be succeeded

by an intensely superstitious one, Indeed do not the
 most insane delusions now thrive in our midst - and
 among people of education too? - But when this tendency
 is checked short of the extreme - it is one which carries
 a great and beneficent promise, - for it strikes a death
 blow at bigotry and dogmatism, - The study of
 science tends ~~to~~ ultimately to deepen in the mind a feeling
 of reverent awe, in the presence of the great mysteries
 of which even the very air we breathe is full, - and to
 make ~~them~~ ^{men} tolerant of each others opinions, - For when
 they see how many sides the truth is, and how impossible
 it is for any one intellect to grasp the whole of it, they
 learn that men who do not see with their eyes and
 from their standpoint may yet report some vision of
 the truth, - Not that this is the direct teaching of
 science - but that ^{science} ~~it~~ leads men up to a point from
 which they may see and feel this for themselves, -
 It is no part of the business of science to inculcate
 moral truth, or to indulge in a crusade against

immoral tendencies, But in the pursuit of its own ends, it unconsciously gives us the conditions of a higher excellence, -- And as a conclusion to the whole matter it may be said that this is the work of scientific thought in the world, to provide external conditions, -- There are these two things to be attended to, the condition, and the life which makes use of the condition, -- Circumstances do not make the man, -- neither can the man make himself without the aid of circumstances, -- You cannot transform the beggar into a prince simply by ~~creating~~ putting him into a princely station, Neither would the prince ever have acquired his place had he ~~started~~^{started} life a beggar, -- Science provides the condition of Moral progress, without which there can be no true advance in civilization, -- but we must look elsewhere for the forces which are to secure this Moral growth, -- It is a great and an essential work this of shaping conditions, -- and however one may sympathize with the man -- one must see that Rousseau's talk about the corrupting influence of science

is nothing but dried, - It is a great work that this 19th Century has done, and though the Church has not as yet reaped much benefit from it, - She will live to count our ~~great~~ scientific men among her greatest benefactors, - All honor to the Masters of Science - who in earlier ages did to emancipate thought from the tyranny of ignorant priests, - But this does not call upon us to honor the men of our own time, who with more zeal than knowledge, seek to put science to a work for which it has no tools, and ^{dream} of pushing it into fields where it can only create confusion, - Science like everything finite has its limits, - Let us respect these bounds, and ~~science~~ ^{it} is a great power for good, - But when we attempt to make it soar on any pretext beyond the realm of material things, - we have one famous precedent to teach us what will happen, - Real wings are the gift of God, - and when it happens that your wings are only made of wax - and are human inventions, the nearer you go to the sun, the swifter will be your fatal plunge into the sea. ~

FPB 2012-010-068